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PATENT SPECIFICATION

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355,686

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COMPLETE SPECIFICATION.

EXAMINER'S
COPY

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✓ Improvements in or relating to Combined Kinematographic and
Sound Record Films.

We, KODAK LIMITED, a Company registered under the Laws of Great Britain, of Kodak House, Kingsway, London, W.C.2 (assignees of JOHN GEORGE CAPSTAFF, British Subject, of Kodak Park, Rochester, New York, United States of America), do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to combined kinematographic and sound record films and more particularly to such films of the kind in which the kinematographic record is coloured by forming in emulsion layers on opposite surfaces of a transparent support registering images in complementary colours, usually red and green or bluish green, of the same object by means of the processes described in the specifications of British Patent No. 13,429 of 1915 and of United States of America Patent No. 1,315,464 so that, when projected, an image is produced which, within the limitations of the dyes used, is naturally coloured.

The double coated film is usually formed by printing, by means of apparatus of the kind described in the specification of British Patent No. 13,430 of 1915 or the specification of United States of America Patent No. 1,591,466, from a master film, latent images in registry on the two sides of the support corresponding to the two colour components, these images being developed into silver images and then bleached and dyed in the manner described in the patents referred to.

When a sound record image is formed in the usual manner along the edge of such a film beside the picture record, it has been found that the dyes usually employed for colouring the picture record are unsuitable for sound reproduction, and the object of the present invention is to provide an improved colour kinematographic film of this type which also carries a sound record.

According to this invention a method of producing such a film consists in forming registering silver picture record images in sensitive emulsion layers carried one on

[Price 1/-]

each side of a transparent support and a silver sound record image in part of the emulsion layer on one side of the support, bleaching the picture images and the sound image so that each is rendered differentially absorptive to dye, and forming dye images of the picture records on both sides of the support and of the sound record, the dye used for the layer carrying both a picture record and the sound record having a high absorption for radiations of wave lengths to which the photo-sensitive cell used in conjunction with the sound record is most sensitive.

Preferably the part of the emulsion layer which is on the opposite side of the support to and registers with the sound record is left clear although, if desired, it may be uniformly tinted with the dye used for the picture record in the layer, the dye being so selected, in this case, that it transmits radiations of wave lengths to which the photo-sensitive cell used in conjunction with the sound record is most sensitive.

When the process for forming dye images which is described in the specification of British Patent No. 13,429 of 1915 is employed, the silver images initially formed on the double coated film must be negative in order to produce positive dye images. Thus if the part of the layer which is on the opposite side of the support to and registers with the sound record is fully exposed, it will be left clear after the bleaching and dyeing process.

The dyes employed will naturally be selected for their transmission as well as colour properties, and it has been found that suitable dyes for the picture in the same layer as the sound record, and thus for the sound record itself, are anthraquinone green and pinatype red D, both of which are well known, the red or the green dye being selected in accordance with whether the picture record to be reproduced as a dye image was exposed through a green or a red filter.

It will be appreciated that the above description is by way of example only and that the invention is not limited to the particular dyes specifically referred to.

Having now particularly described and

ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

- 5 1. The method of making a combined kinematographic and sound record film having a colour picture record of the kind described, which consists in forming registering silver picture record images in sensitive emulsion layers carried one on each side of a transparent support and a silver sound record image in part of the emulsion layer on one side of the support, bleaching the picture images and the sound image so that each is rendered differentially absorp-
10 tive to dye, and forming dye images of the picture records on both sides of the support and of the sound record, the dye used for the layer carrying both a picture record and the sound record having a high absorption for radiations of wave lengths to which the photo-sensitive cell used in conjunction with the sound record is most sensitive.
- 25 2. The method of making a combined kinematographic and sound record film as claimed in Claim 1, in which the part of the emulsion layer which is on the opposite side of the support to and registers with the sound record image, is left clear.
- 30 3. The method of making a combined kinematographic and sound record film as

claimed in Claim 1, in which the emulsion layer on the opposite side of the film to the sound record and the picture record formed therein are treated with a dye which transmits radiations of wave-lengths to which the photo-sensitive cell used in conjunction with the sound record is most sensitive.

4. The method of making a combined kinematographic and sound record film as claimed in any one of the preceding claims, in which the sound record and the picture record in the same layer are dyed with anthraquinone green or pinatype red D according as the picture record is the colour component image to be dyed green or red.

5. A combined colour kinematographic and sound record film comprising a transparent support, an emulsion layer on each side of the support, registering complementary-colour dye picture record images in the layers, and a dye sound record image in one of the layers, the dye for the sound image and the picture image formed in the same layer having a high absorption for radiations of wave lengths to which the photo-sensitive cell used in conjunction with the sound record is most sensitive.

Dated this 26th day of May, 1930.

KILBURN & STRODE,
Agents for the Applicants.